THE TREATMENT OF HÆMATEMESIS BY GASTRO-ENTEROSTOMY.[1]

WITH REPORT OF CASE.

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In cases of hæmatemesis, two lines of operative treatment are available,—the direct and the indirect. The direct includes the theoretically ideal methods, and others less ideal, but still acting primarily upon the source of the hæmorrhage. The indirect methods are those operative procedures that exert a healing or hæmostatic influence, in some manner not involving the ulcer itself.

These two methods may be classified as follows:

A. Direct.
1. Excision of ulcer.
2. Partial gastrectomy or pylorectomy.
3. Ligation of the principal artery.
4. Cauterization or curettage of ulcer.
5. Ligation of mucous membrane.
6. Ligation of all coats.

B. Indirect.
1. Gastro-enterostomy.
2. Pyloroplasty.
3. Gastrotomy.

In considering Class A as a whole, it will be found that there are many reasons why these methods are impracticable, and many times cannot be carried out.

These objectionable points are such as the difficulty of locating the ulcer; the source of a hæmorrhage sufficient to cause death may easily escape detection. The fact that in 20 per cent. of the cases the lesion is multiple, the presence of

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firm and vascular adhesions, sometimes to adjacent and important organs, such as the pancreas; likewise the indistinct limitations of the pathological tissues. All of which have tended towards making impracticable the direct methods of attack of the bleeding point.

As to the choice of these methods, it would seem to lie between ligature of all coats, as recommended by Andrews, and partial gastrectomy or excision of the ulcer, if the last two are practicable.

The high mortality rate of some and the impracticability or the unreliability of the others of the direct methods have been the cause of a general turning to the indirect methods, especially to that apparently all-healing operation, gastro-enterostomy.

The exact manner in which a gastro-enterostomy usually causes a healing of the ulcer is a question more or less debatable. But the explanation usually accepted is, in effect, as follows: The anastomotic opening allows of a comparatively perfect drainage; the stomach is rapidly emptied, is therefore given rest and quiet; the hyperchlorhydria is diminished, and, as the opening is at the most dependent portion of the stomach, and to the left of the ulcer-bearing area, the ulcer is not irritated by prolonged contact with the stomach contents.

It has also been claimed that the admittance of the small amount of bile and pancreatic juice that find their way into the stomach exert a beneficial influence upon the ulcer.

In certain cases, where the gastro-intestinal opening becomes closed because of the improved and more patent condition of the pylorus, the symptoms of gastric ulcer, and even hæmorrhage, have been known to return. As to whether this is due to the formation of new ulcers, or to a revival of the old, it cannot be definitely stated.

As to the stopping of gastric hæmorrhage, by the performance of a gastro-enterostomy, such substantial reasons as those stated above for the healing of the ulcer cannot be presented.

The chief reason for expecting hæmorrhage to cease after the operation will be on account of the rest given to the

stomach by the new opening, so, to a large extent, doing away with peristalsis, and at the same time allowing the organ to contract; and also the lack of irritation of the bleeding point by the stomach contents.

These conditions, and others, do, without doubt, favor the stopping of hæmorrhage and the formation of a clot.

But that there are cases in which these measures are not sufficient to arrrest the hæmorrhage, cannot be doubted. And it would certainly seem unreasonable to expect such round-about and indirect measures to stop a profuse hæmorrhage in instances where a large artery has been opened laterally, as in the case reported with this contribution to the subject.

And even in cases where the bleeding was found to be due to a parenchymatous oozing, the operation has been known to fail to arrest the hæmorrhage. It would seem that, as a method of stopping hæmorrhage from a large artery, it cannot be relied upon. And that in cases in which the bleeding comes from the smaller capillaries, it is practically, but not always, sufficient.

The amount of the hæmatemesis will be found to be no criterion as to the size of the bleeding vessel; in cases that have rapidly terminated fatally, the bleeding point has been so small as to escape detection at autopsy, even in the hands of the most expert.

On the other hand, cases in which the bleeding vessel has been found to be of such caliber as the splenic artery, life has persisted for weeks, after the beginning of the hæmorrhage. Therefore, as we are not able to determine, with any reasonable degree of accuracy, as to the nature of the source of the hæmorrhage, it would seem that a gastro-enterostomy was indicated *only* after a thorough search for the bleeding point.

The exact status of gastro-enterostomy as a hæmostatic measure in gastric hæmorrhage is not definite, as may be very forcibly brought out by the following quotations from Moynihan and from Robson:

Moynihan says:

"Surgical intervention is rarely needed in cases of hæmorrhage from acute gastric or duodenal ulcer. When it is called for, gastro-enterostomy speedily performed is the surest means of arresting the hæmorrhage. A search for the bleeding point is futile, and harmful, and unnecessary. Search for and local treatment of the ulcer or the ulcers is not necessary. A gastro-enterostomy will without doubt prevent recurrence of the hæmorrhage, and lead to a rapid healing of the ulcer from which the blood has come."

Robson says:

"If no ulcer be found anywhere, and the bleeding proves to be capillary, or from small undiscoverable ulcers, gastro-enterostomy should be performed; but if an ulcer be discovered, and it be possible to excise it, that operation should be done, as it undoubtedly offers the likeliest method of cure."

And again, in speaking of an acute case, he says:

"Case V illustrates the feasibility of exploring the stomach, even in a patient brought very low by excessive loss of blood, and although the ligature of the chief bleeding point was effected, it was deemed advisable to secure rest for the stomach by performing a posterior gastro-enterostomy, especially as it could be done without materially prolonging the operation."

The ideas expressed in the first quotation, that a search for the bleeding point is futile, harmful, and unnecessary, because a gastro-enterostomy will, without doubt, prevent recurrence of the hæmorrhage, has apparently been gaining headway. But that the assertions are hardly in accordance with the facts can be seen from the Case V of Robson's series, and many others in the literature.

To emphasize the conflicting opinions, I will quote the following extracts:

Moullin. "In every case in which it is practicable, I am strongly in favor of dealing with the ulcer directly in preference to performing a gastrojejunostomy."

Buck. "An operation for acute hæmatemesis, whether from an acute or chronic ulcer, seems to me to be an emergency operation, in which one would not feel satisfied unless one performed that for which the operation was undertaken, and secured the bleeding point."

Butlin. "The best plan is to open the stomach, and if the bleeding

point cannot be found, then to do gastro-enterostomy; but to operate on the bleeding point is the best surgery."

HADERSHON could not see how gastro-enterostomy could check the hæmatemesis when the ulcer was far from the pylorus.

SYMONDS considers the operation certainly to be indicated when the ulcer is situated near the pylorus, but to be of doubtful advantage when the lesion was elsewhere.

HAYEM found that the subsequent histories of patients upon whom gastro-enterostomy had been done for simple ulcer showed that there is very likely to be a return of symptoms, with hæmatemesis, gastric crises, or perforation. These symptoms, in his opinion, being due to the formation of new ulcers, or, more rarely, to carcinomatous changes in the old ulcer.

That gastro-enterostomy does not, without doubt, prevent recurrence of the hæmorrhage will be proven by the case reported with this article, and by others collected from the literature.

These cases are, in brief, as follows:

SAVANARIAUD noted reports of two cases in which the patients vomited blood after the operation of gastro-enterostomy.

The first by Roux. Patient had hæmatemesis for some time before the operation. The evening of the same day, and the next day, considerable blood was vomited. Ultimate recovery.

The second by Porge, who did gastro-enterostomy for a tumor which obliterated the pylorus. On the fifth day after the operation the patient died. Autopsy found the intestine full of blood; a recent ulcer in the vicinity of the common duct had caused the hæmorrhage.

RYDYGIER says, "Cases are known where an hæmatemesis has killed the patient, notwithstanding a gastro-enterostomy that had been made before." And that he has met with one such case in his experience.

L. FRANK cites the case of an ulcer at the lesser curvature adherent to the liver, in which he did gastro-enterostomy en Y. Patient did well for four days, and then had a return of the hæmatemesis and died. Autopsy showed two ulcers; an open artery was found in the base of one, from which the bleeding undoubtedly came.

KOCHER says, "That these methods (pyloroplasty and gastro-enterostomy) lead to healing has been proven, but not always. I have seen, after an uneventful recovery of a gastro-enterostomy, a hæmorrhage from an ulcer lead rapidly to death."

PETERSON reports a case of gastro-enterostomy performed for hæmorrhage. "Ten weeks after this operation the patient died from hæmorrhage from the stomach, which very likely came not from an ulcer but from the parenchyma."

KORTE mentions one case (out of seventeen operated upon while the

ulcer was "open") in which the hæmorrhage continued after the performance of a gastro-enterostomy.

According to A. T. CABOT, "Korte reports two fatal cases of hæmorrhage from ulcers eight and twelve days after gastro-enterostomy." But from a careful search of Korte's contributions to the subject in different publications, we have been unable to find the second case, but did find a case of operation for hæmorrhage in which gastrotomy was performed, and the ulcer, near the lesser curvature, cauterized with the Paquelin. Death in this instance occurred on the eighth day from a recurrence of the hæmorrhage.

A. W. MORTON reports a case of acute hæmatemesis; at operation no evidence of ulcer was found by an examination of the external surface of the stomach. Therefore he did an anterior gastro-enterostomy. Death occurred on the second day. At autopsy there was found to be no peritonitis, button well taken, considerable blood in stomach and bowels. Two large ulcers on the posterior wall of the stomach.

ROBSON cites a case, which possibly had better be differentiated from the others, because it was thought to be one of carcinoma; but as the differentiation of ulcer from carcinoma in this class of cases is at times most difficult, and as it is interesting, in showing the influence, or lack of influence, of gastro-enterostomy upon hæmatemesis of a possible carcinomatous origin, a brief synopsis of the case is here appended.

Woman, forty-two years of age, gave a history of five attacks of severe and alarming hæmatemesis. At operation found a tumor of the pylorus, with so many enlarged glands that, had it been malignant, its removal would have been useless; in consequence, a gastro-enterostomy was done. Recovery from the operation was uneventful. But at the end of a month, while sitting up, husband reading to her, she suddenly collapsed and died within a quarter of an hour; profuse hæmorrhage was evidently the cause of death. Blood oozed from the anus. No autopsy. It was thought that the carcinoma or the ulcer invaded either the portal vein or the vena cava.

The AUTHOR'S CASE is in brief as follows:

Acute, non-symptomatic, repeated hæmatemesis. With the exception of an attack of typhoid fever one year ago, previous and personal history negative.

On June 9, 1903, while in apparent health, vomited about two pints of bright red blood.

On the 10th, at about the same time of the day, had a similar attack of hæmatemesis.

On the 12th, two hæmorrhages occurred, of about a pint each, one in the morning and one in the evening.

On the morning of the 13th, another hæmorrhage took place. As medical treatment seemed to be of no avail, and as it was

feared that another hæmorrhage might prove fatal, it was decided to operate.

An examination of the external surface of the stomach gave no clue as to the location, nor the character of the bleeding point. And as a hasty examination of the mucosa failed to reveal the point, an anterior gastro-enterostomy was performed.

Patient did nicely for two days, and then became weaker, no vomiting, but blood passed from the bowel. Death occurred on the morning of the fifth day.

Autopsy revealed the site of the anastomosis intact and water-tight; no peritonitis; the stomach and bowel contained considerable blood.

After removing and opening the stomach, a typical round ulcer, one-half by one-fourth inch in dimensions, was found on the anterior wall, near the pylorus and the lesser curvature.

Microscopic examination showed an eroded artery at the base of the ulcer.

As showing the necessity of direct operation, in some cases which cannot be determined upon without an examination, may be cited the case of Kocher, where the hæmorrhage originated from an ulcer, embedded in which was a cherry-stone.

The futility of gastro-enterostomy in such a case is very evident.

The fact that gastro-enterostomy may have little or no influence, as a hæmostatic measure, upon gastric or duodenal hæmorrhage is well emphasized by Eccles case, in which gastro-enterostomy was performed for non-malignant pyloric obstruction. The patient did well till the eleventh day, when he vomited blood, and died on the fourteenth day, after a profuse hæmatemesis.

At autopsy, the anastomosis was found to be perfect and patent. The hæmorrhage had evidently originated from an ulcer of the duodenum which had eroded the hepatic artery.

These cases tend to show that gastro-enterostomy is but an indirect and unreliable method of dealing with bleeding from the stomach; and while it has, in many cases, been fol-

lowed by a cessation of the hæmorrhage, and eventually a healing of the ulcer, it cannot be relied upon with any sense of security to stop the hæmorrhage in all cases.

Moullin, in speaking of this operation in this connection, says, "It is at best only a way of evading difficulties which are better met directly, before they have attained dimensions which render this impracticable."

And this statement will be found to be well fortified by the discussion of a recent article of Munro's, in which there is related five cases of gastric surgery, as follows:

1. Hæmorrhage, gastro-enterostomy, recovery from operation, death twenty months later, from cancer which probably existed at the time of the operation.
2. Hæmorrhage and dilatation, gastro-enterostomy, with entero-enterostomy, death with circular vomiting, sixteen days after operation.
3. Hæmorrhage and dilatation, gastro-enterostomy, entero-enterostomy, death within thirty-six hours.
4. Hæmorrhage and dilatation, excision of ulcer. Recovery, well two years after operation.
5. Hæmorrhage and dilatation, gastro-enterostomy. Recovery from operation, death one month after, due to colloid cancer.

The fact that in this series of four gastro-enterostomies two recovered from the operation, to subsequently succumb to carcinoma, should at least impress upon us the advisability of a more thorough search, and, if practicable, an attempt to prevent such a sequel.

In attempting to outline the indications for the operation of gastro-enterostomy in hæmatemesis, it may be stated that a thorough, faithful, and judicious search fails to reveal the source of the hæmorrhage; or if it is found and the conditions will not allow of one of the direct methods to be employed, then gastro-enterostomy may be performed.

This thorough search will add but little to the severity of the operation, as the examination of the internal aspect of the stomach can be made through the opening which is to be used in the gastro-enterostomy, if it is located at the lower portion of the greater curvature.

The question as to the advisability of supplementing one

of the direct methods by a gastro-enterostomy is not, as yet, settled.

The object of this additional step is to place the stomach at rest, and in this way favor the healing of the wound made by the direct interference. Also to act as a prophylactic measure, and to remove what is thought to be a cause of ulcer, hyperacidity and imperfect drainage of the stomach contents. Where there is marked dilatation, and other symptoms of ulcer, with the hæmorrhage, such an additional operation will usually be employed, if, in the operator's opinion, the condition of the patient will warrant it.

The performance of a gastro-enterostomy after radical treatment of the bleeding point will not add materially to the operation, as the anastomosis may be made at the opening in the stomach which was used for the exploration. But, on the other hand, the routine addition of gastro-enterostomy to direct treatment will undoubtedly increase the time and the severity of the operation to a greater or less extent.

The so-called "vicious circle," while markedly diminishing in frequency, is still occasionally encountered, even if the opening is placed at the most dependent portion of the stomach.

Ulcer of the duodenum, perforating or giving rise to hæmorrhage, following gastro-enterostomy, has occurred so frequently as to make it appear possible that such an accident might be more than a mere coincidence; and that gastro-enterostomy may be found to act as a causative factor has been suggested, and the question is under investigation. In 1900, Steinhall collected five such cases.

Peptic ulcer of the jejunum has also been described as a result of the abnormal condition caused by gastro-enterostomy. Brodnitz collected fifteen cases of this character in 1903.

All of these points should make us want sufficient evidence as to the necessity of gastro-enterostomy as a supplementary operation before it be accepted as a routine measure.

To recapitulate. Gastro-enterostomy is indicated in hæmatemesis,—First, after a thorough search has failed to reveal the source of the hæmorrhage; second, where the

cases the patient was anæsthetized upon admission to the hospital in order to confirm the diagnosis without giving too much pain. The extremity was placed in the corrected position; measurements were made before and after anæsthesia, and before and after the correction. The extremity was placed in the corrected position, and then the rubber adhesive plaster applied as directed by Ruth. This method was first introduced many years ago by Dr. Maxwell, of Keokuk, a colleague of Dr. Ruth's. Extension was applied downward; then a second broad rubber adhesive plaster was applied from a point on the anterior inner surface as high up as possible around the posterior surface of the thigh and out; and the speaker made use of a little device which consisted of adjustable posts made for weight and pulley extension, applied to the side as well as to the foot of the bed. He had found this very convenient. One of these frames was placed opposite the greater trochanter a little above it, and a weight varying from four to twelve pounds was attached to this pulley, which caused internal rotation, and another weight of eight to twenty-four pounds was attached to a second pulley at the foot of the bed, causing extension.

One of the beneficial results of the treatment was, that whereas formerly, when extension was made in a longitudinal direction, and a posterior or lateral splint applied, there was pain always, with this method but one of the sixteen patients had complained of severe pain, and this patient was so very hysterical that it was doubtful whether she had pain or not. It seems as though the use of this method would greatly reduce the number of ununited fractures of the hip.

Personally, he had made the open operation but once in a case in which the patient had a very painful hip, with ununited fracture. In this case he used two Parkhill screws through the neck and into the head; but the result was not satisfactory, and he had to remove the head afterwards. Union was primary, but there was so much callus as to cause pain. Possibly the traumatism was too great, due to the use of two screws.

Dr. Alexander Hugh Ferguson said he had had three cases of ununited fractures of the neck of the femur upon which he had operated.

The first was a man, fifty years of age, and the fracture was of three years' standing. Operation was done on account of pain